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METROPOLITAN TRANSPORTATION

– a program for action

REPORT TO

NELSON A. ROCKEFELLER
GOVERNOR OF NEW YORK

FROM THE
METROPOLITAN
COMMUTER
TRANSPORTATION
AUTHORITY

FEBRUARY 1968

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TO: Governor Nelson A. Rockefeller

On November 7, 1967, you requested this Authority to prepare a comprehensive plan and action program of transportation improvements for the New York State portion of the metropolitan region.

In developing this report, we drew upon the resources of governmental and voluntary agencies throughout the region. We wish to express our appreciation for the information and cooperation provided us by these agencies. MCTA assumes the responsibility, however, for the specific projects and recommendations set forth in this report.

We present herewith a comprehensive plan and action program.

The program is big.
The program is "do-able."
The program makes up for time lost.
The program will meet present and future needs.

We are recommending a two-phase program. The first phase represents a first priority system, complete in itself. It will cost $1.6 billion. The work on Phase One would be fully committed within five years and totally completed within ten. It can be financed from State Transportation Bond Issue funds, local contributions, public authority contributions and Federal aid.

We are also projecting a longer range program — Phase Two — which is conceived as a logical extension of the Phase One priority projects.

Phase Two will cost $1.3 billion and will further improve the region's transportation system. It would be financed, a decade or more from now, by Federal, State and local governments and by public authorities. By that time, the Federal share should represent the major portion of contribution.

The total cost of both phases is $2.9 billion at current price levels.

In recommending this program, we stress the urgency of starting Phase One this year. Unless major commitments are made now, unless construction is started promptly, pressing needs will not be met and costs will rise beyond our capacity to meet them.

Respectfully submitted,

William J. Ronan, CHAIRMAN
William L. Butcher
Bruce A. Gimbel
Eben W. Pyne
William A. Shea

SUMMARY OF RECOMMENDATIONS

PHASE ONE

We recommend the adoption of the following program for immediate transportation action:

- Rapid completion of the already authorized four-track tunnel under the East River between 63rd Street, Manhattan, and Long Island City, Queens, for expanded transit and Long Island Rail Road service.

- An additional high-speed express track for the Queens Boulevard subway to be constructed along the LIRR Main Line right-of-way for increased capacity and speed.

- A new transit line extending from the existing Queens Boulevard Line along the Long Island Expressway corridor to serve the growing areas of northeastern Queens.

- A new transit line extending from the existing Queens Boulevard subway along the LIRR Atlantic Branch right-of-way to meet travel needs of southeastern Queens.

- A new Second Avenue subway in Manhattan extending north from 34th Street to the Bronx, with connections at 63rd Street to Queens and West Side Manhattan.

- A new express transit line in the Bronx along the abandoned right-of-way of the New York, Westchester and Boston Railroad, connecting the new Second Avenue subway with the existing Dyre Avenue Line and the Upper Pelham Bay Line.

- A new 63rd Street crosstown subway, connecting the new East River tunnel with the new Second Avenue Line and the existing Sixth Avenue and BMT Broadway-Seventh Avenue subways.

- Extension of the Nostrand Avenue subway in Brooklyn along Flatbush Avenue to a modern terminal at Avenue U to serve the growing Mill Basin area.

- Extension of the New Lots Line in Brooklyn to a modern terminal at Flatlands Avenue and Linwood Street in the developing Spring Creek area.

- Purchase of about 500 high-speed, air-conditioned subway cars for operation on the new subway extensions.

- Expansion of yard and shop facilities to serve the new subway lines.

- Rehabilitation and re-equipment of the Staten Island Rapid Transit Railway from Tottenville to St. George.

- Construction of a spur of the LIRR to John F. Kennedy International Airport to permit dependable high-speed transportation between the airport terminal and Manhattan with connections at Jamaica for Brooklyn, Queens and Long Island points.

■ Modernization of the Long Island Rail Road, including the purchase of 350 new high-speed, multiple-unit cars; high-level platforms; track, signal and electrification improvements; yard and shop expansions; modernization of Jamaica Station and improvements at Penn Station and Flatbush Avenue Terminal; and extension of electrified service to Northport on the Port Jefferson Branch and Pinelawn on the Main Line.

■ A new Metropolitan Transportation Center in East Midtown Manhattan, including a terminal for the LIRR linked to the 63rd Street tunnel; a terminal for high-speed rail access to JFK Airport; and a major interchange point for east-west movement of people via a new Central Business District distribution system.

■ Modernization of the New Haven Railroad commuter service, including purchase of 144 new high-speed, multiple-unit cars; improvements to the signal and electrification system; construction of high-level platforms and rehabilitation of existing electric cars.

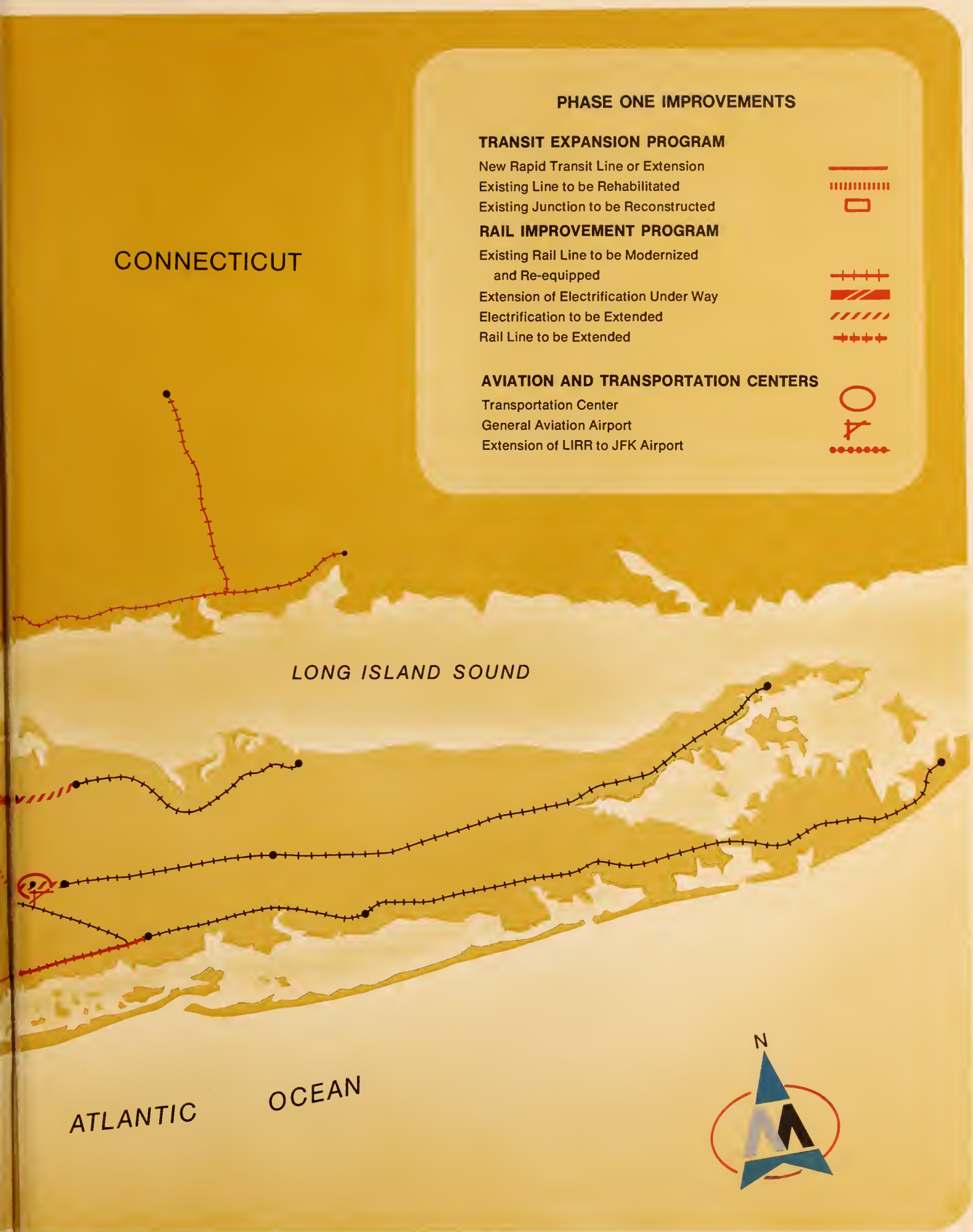
■ Modernization of the Penn Central Railroad commuter service, including purchase of 130 new high-speed electric cars, construction of high-level platforms and extension of electrification to Brewster on the Harlem Division.

■ Modernization of the New York portion of the Erie Lackawanna Railroad, including new equipment to meet immediate needs and a study of the feasibility of providing direct track connections to Penn Station.

■ Development of general aviation airports as part of major transportation centers at Republic Airport in Long Island and Spring Valley in Rockland County. Also, development of a general aviation airport in northwest Westchester.

■ Transportation centers at Pearl River and Orangeburg in Rockland County, and at Tarrytown and in the White Plains area in Westchester County.

NEW YORK
NEW JERSEY
Hudson River


PHASE ONE IMPROVEMENTS
TRANSIT EXPANSION PROGRAM
New Rapid Transit Line or Extension
Existing Line to be Rehabilitated
Existing Junction to be Reconstructed
RAIL IMPROVEMENT PROGRAM
Existing Rail Line to be Modernized and Re-equipped
Extension of Electrification Under Way
Electrification to be Extended
Rail Line to be Extended
AVIATION AND TRANSPORTATION CENTERS
Transportation Center
General Aviation Airport
Extension of LIRR to JFK Airport
CONNECTICUT
LONG ISLAND SOUND
ATLANTIC OCEAN
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SUMMARY OF RECOMMENDATIONS

PHASE TWO

We further recommend a continuing program beyond the first phase as follows:

- Extension of the Second Avenue subway from East 34th Street south along Water Street to serve the burgeoning lower Manhattan area.

- A new midtown distribution system along 57th, 48th, 42nd and 33rd Streets, using high-speed conveyors, small rail cars or other guided systems to link terminals, stores, offices, theatres and other CBD travel points.

- Extension of the new northeastern Queens subway to Springfield Boulevard.

- Extension of rapid transit service east of Jamaica and removal of BMT elevated in Jamaica business district.

- Replacement of the Third Avenue elevated in the Bronx with a new transit line adjacent to Penn Central Railroad right-of-way along Park Avenue.

- Extension of the Pelham Bay Line in the Bronx to a terminal in Co-op City.

- Extension of the Concourse subway to a modern transfer station at White Plains Road to serve the northeast Bronx.

- Purchase of 500 additional high-speed, air-conditioned subway cars for use on new extensions and to meet new travel demands.

- Additional improvements to shops and yards on extended systems.

- Continuation of transit improvements on Staten Island.

- Continuation of LIRR modernization program, including extension of electrified service to Port Jefferson, Ronkonkoma and Patchogue; additional high-speed electric and dual-powered cars; and further improvements to stations, track and signal systems.

- Extension of LIRR Brooklyn service to lower Manhattan.

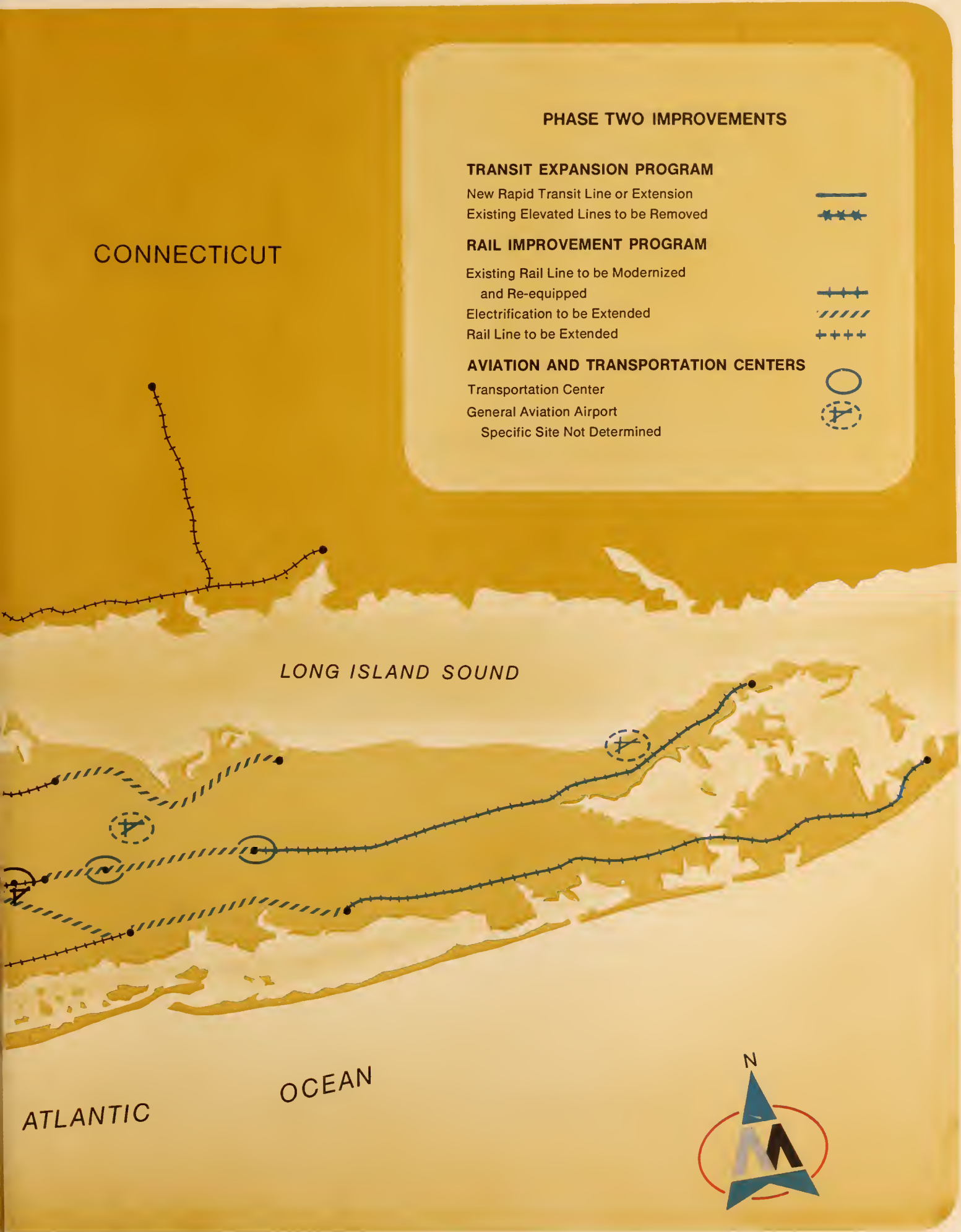
- Continuation of Penn Central modernization, including extension of electrified service to Peekskill on the Hudson Division; modernization of the signal system; purchase of electric and dual-powered cars; and improvements to signals and track.

- A new railroad station at 149th Street, the Bronx, to provide convenient interchange between the Penn Central and New Haven Railroads and the subway system.

- Additional general aviation airports on Long Island and in southwest Dutchess County.

- Transportation centers in Hicksville, Pine Aire and Ronkonkoma on Long Island; Brewster in Putnam; Beacon in Dutchess; New City and Suffern in Rockland; and Goshen in Orange Counties.

NEW YORK
NEW JERSEY
Hudson River


PHASE TWO IMPROVEMENTS
TRANSIT EXPANSION PROGRAM
New Rapid Transit Line or Extension
Existing Elevated Lines to be Removed
RAIL IMPROVEMENT PROGRAM
Existing Rail Line to be Modernized and Re-equipped
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Rail Line to be Extended
AVIATION AND TRANSPORTATION CENTERS
Transportation Center
General Aviation Airport
Specific Site Not Determined
CONNECTICUT
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REGIONAL NEEDS—TODAY AND TOMORROW

The crucial factor for transportation in this region is the interdependence of city and suburb — the interdependence today, the even greater interdependence tomorrow.

This whole great tri-state metropolitan region has 18 million people who live in some 13,000 square miles.

By 1985, this region will have 25 million people. In other words, the region as a whole must absorb the equivalent of two Chicagos in less than two decades.

The prospects, based upon the best available projections, are that the population growth will take place principally in the suburbs. New York City is not expected to grow much by 1985. Its dwelling population will redistribute somewhat, however, with the outer areas of the city — Staten Island, Queens, parts of Brooklyn and the Bronx — growing, while the older areas closer to the core remain relatively stable in population.

But it will be the suburbs that must absorb the greatest part of the increase.

Population growth in the outer parts of the city and the surrounding counties will be complemented by a continuing rise in industrial development and new commercial sub-centers in these areas. This has important implications in terms of employment and transportation.

By 1985, we will add more than 2.5 million non-agricultural jobs to the regional job market. Most of the growth in blue collar jobs will take place outside the central city area. Yet, the core area will continue to house a large proportion of the region's unskilled and semi-skilled labor pool.

Thus, we are confronted with the need to use our transportation capability to better match people with job opportunities throughout the region. The concept of reverse commutation and the need for fast, efficient, low-cost transit becomes increasingly significant.

In the core city area, the Manhattan Central Business District will continue to serve as a regional job magnet. White collar worker employment and associated service industry employment will increase faster than the relative decline in so-called blue collar or manufacturing employment in this area.

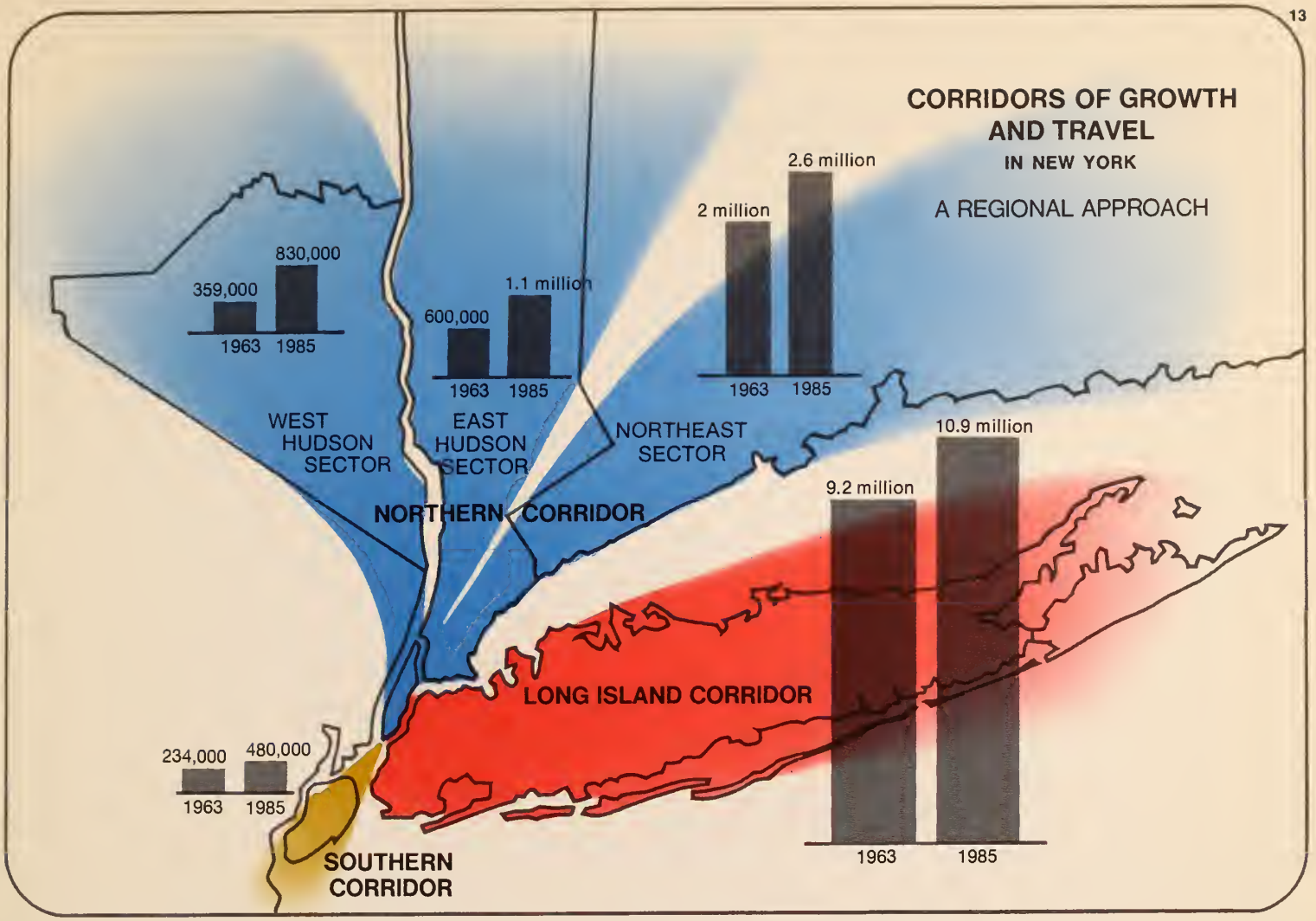
Of the 7.8 million people gainfully employed in the region, 28 percent work in 8.6 square miles, comprising the Manhattan Central Business District. In other words, over two million persons work daily in an area as compact as Kennedy Airport. Here, too, the transportation implications are profound.

The "office building capital of the world" brings to this region the greatest single concentration of managerial and business-professional talent ever assembled anywhere. Yet, its lifelines extend to the outer boroughs of the city and, importantly, throughout the entire region. Twenty percent of the CBD workers come from suburbia; 46 percent from the other four boroughs of New York City. These employees bring to the CBD their skills and talents; they take back with them the purchasing power that brings wealth, income and increased property values.

To accommodate this growth in the CBD means the addition of 82,500,000 square feet of office space by 1985. This is the equivalent of 55 more buildings the size of the Time-Life Building. To man this huge office complex and to serve it, we must make provision to transport growing numbers of people from the outer reaches of the city and the suburbs.

The regional mix of jobs and workers, of population growth and economic development has heightened our interdependency. Each area within the region needs the other to grow and prosper. Significantly, the factor of mobility — the movement of people and goods — is the key to sustaining this.

Our ability to get people to their jobs and goods to the marketplace is a fundamental challenge in a rapidly urbanizing society. This consideration is the underlying basis for this transportation report.



The Transit Expansion Program

The first priority or immediate action phase of the transit program includes construction of:

- new lines needed to relieve existing overcrowding, especially on the Queens Boulevard and the Lexington Avenue Lines;

- improvements to bottleneck terminals and junctions to permit existing lines to operate more efficiently; and

- rehabilitation of obsolete transit lines, such as the Staten Island Rapid Transit Railway.

The second priority, builds on the first phase and makes further additions to the transit program.

The estimated cost for the rapid transit expansion program is $961 million for the first phase and another $814 million for the second phase, totalling $1.8 billion.

New subways will be designed to meet high standards for fast and attractive service. To accomplish this, careful attention will be paid to alignment, grades,

track work and the design of stations. New cars will be capable of high performance and speeds up to 80 mph. They will provide modern features for safety, speed and comfort including air-conditioning and other conveniences to satisfy modern travel demands.

Rail Improvement Program

The recommended rail improvements are designed to provide a modern, efficient transportation system to serve the journey-to-work needs of residents throughout the region; bolster the economic growth of the city and the surrounding region; and offer an attractive and rapid alternative for a variety of travel needs.

First priority recommendations heavily emphasize the need to replace antiquated and slow rolling stock; improve power and operational facilities; extend electrification into growth areas; relieve bottlenecks for more efficient operation; and improve access to Manhattan's CBD.

The second phase of development is based on extending high-speed electrified service into new growth areas; completing modernization work started under the first phase; and providing access to the lower Manhattan area.

The estimated cost for the rail improvement program is $547 million for the first phase and $391 million for the second phase, totalling $938 million.

The design specifications for new suburban rail service will provide us with a system without peer. The 100 mph multiple-unit cars currently under construction for the LIRR will serve as a prototype for a new level of fast, comfortable and attractive service throughout the region.

Other Transportation Improvements

In addition to the major rail and transit improvements projected in this report, we are recommending expenditure of $157 million for Phase One transportation centers, aviation facilities and airport access. Our objective is to provide modern facilities to serve as major junction points for air, rail and highway travel. A total of $84 million is recommended for general aviation and for combined transportation center-general aviation development of which $49 million is proposed for the first phase.

As part of the program to improve coordination of transportation modes, we are urging immediate action to provide a high-speed rail link to JFK Airport. The estimated cost of this first priority project is $100 million.

Regional Transportation Corridors

In developing specific transportation projects and priorities, regional needs were considered in terms of transportation corridors as follows:

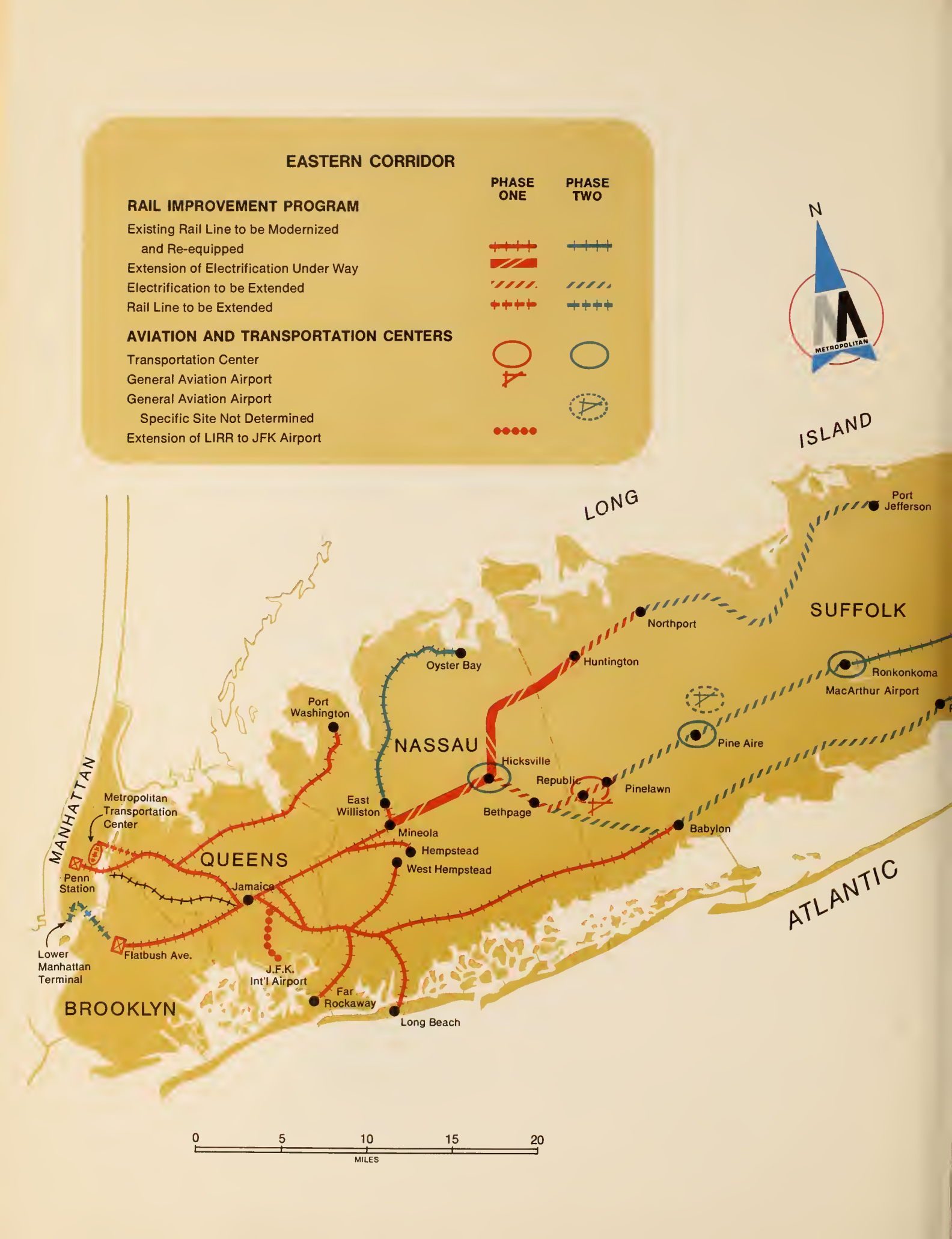
Eastern Corridor Queens; Brooklyn; Nassau-Suffolk sectors
Northern Corridor Upper Manhattan-Bronx; Westchester-Putnam-Dutchess (Connecticut); and Rockland-Orange (New Jersey) sectors
Southern Corridor Staten Island sector
Central Business District Manhattan, south of 63rd Street

Within these corridors and sub-sectors, we are recommending improvements affecting rail, transit and other transportation facilities totaling almost $3 billion, as follows:

(Cost Estimated in Millions of Dollars)

	Phase One	Phase Two	Total
Eastern Corridor	$ 806	$ 533	$1,339
Northern Corridor	428	294	722
Southern Corridor	25	10	35
Central Business District	406	441	847
	$1,665	$1,278	$2,943

EASTERN CORRIDOR


EASTERN CORRIDOR
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METROPOLITAN
LONG ISLAND
Port Jefferson
SUFFOLK
Northport
Huntington
Oyster Bay
Ronkonkoma
MacArthur Airport
Port Washington
NASSAU
Pine Aire
Hicksville
Republic
Pinelawn
Bethpage
East Williston
Babylon
Mineola
Hempstead
West Hempstead
MANHATTAN
Metropolitan Transportation Center
QUEENS
Penn Station
Jamaica
Lower Manhattan Terminal
Flatbush Ave.
J.F.K. Int'l Airport
Far Rockaway
Long Beach
BROOKLYN
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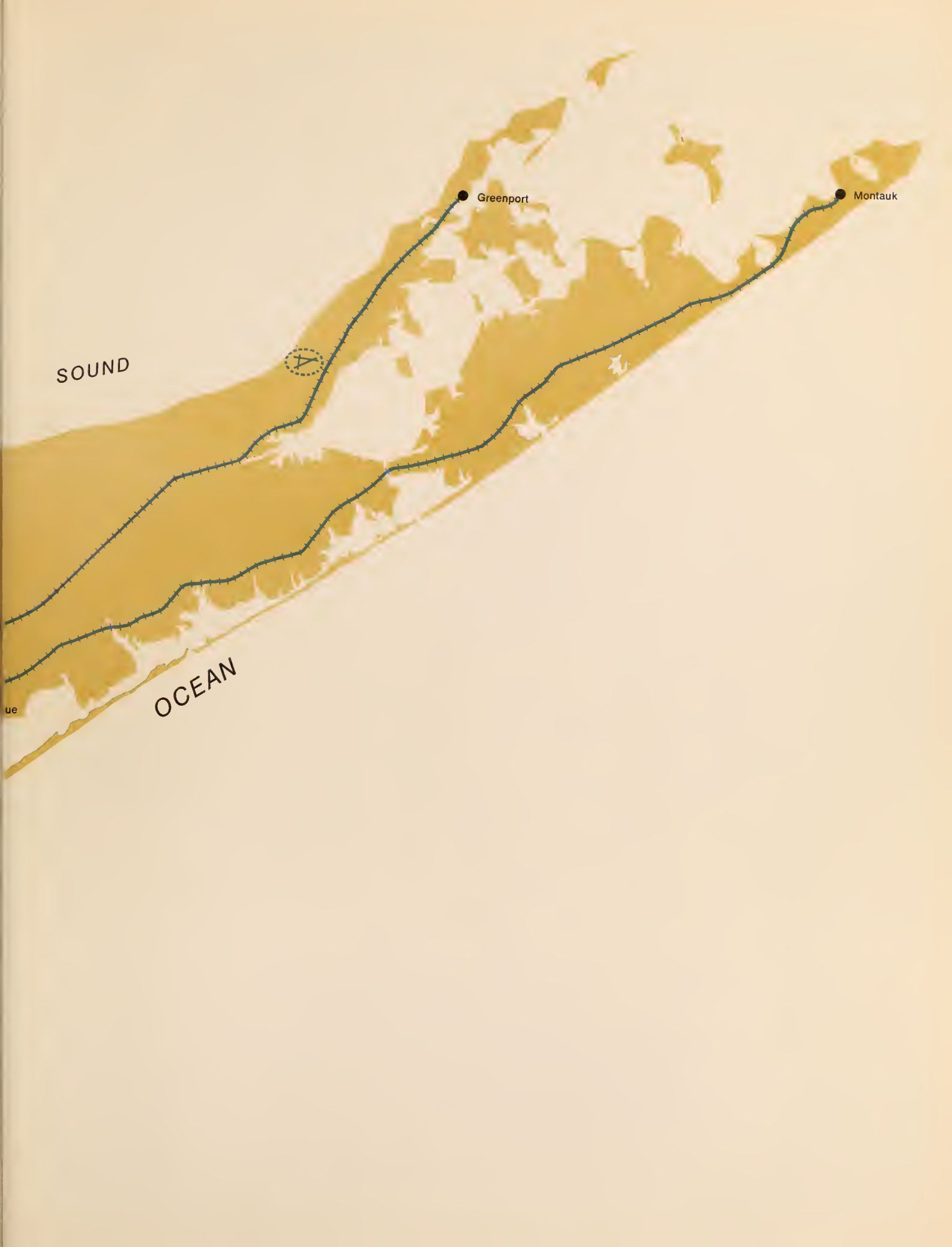
MILES


Greenport
Montauk
SOUND
OCEAN

EASTERN CORRIDOR BROOKLYN-QUEENS SECTOR

TRANSIT EXPANSION PROGRAM

	PHASE ONE	PHASE TWO
New Rapid Transit Line or Extension	▬	▬
Existing Junction to be Reconstructed	☐	
Existing Elevated Line to be Removed		✕✕✕

RAIL IMPROVEMENT PROGRAM

	PHASE ONE	PHASE TWO
Existing Rail Line to be Modernized and Re-equipped	++++	
Rail Line to be Extended	+++	+++
Existing Station to be Modernized	☒	

AVIATION AND TRANSPORTATION CENTERS

Extension of LIRR and JFK Airport ●●●●●

New East River tunnel at 63rd Street will provide high-speed service and new access to Manhattan for subway trains, upper tracks, and LIRR, below.

EASTERN CORRIDOR

DESCRIPTION OF PROJECTS

PHASE ONE

Transit Expansion

Cost (millions)

63rd Street Tunnel Queens Connections — **$45**

The new 63rd Street East River tunnel will provide the capacity needed for expanded rapid transit service in the Queens sector of the Eastern Corridor. It will reduce overcrowding on the Queens Boulevard Line, the 53rd Street tunnel, the Flushing-42nd Street Line and the 60th Street tunnel. Together with new branch lines, there will be faster, more frequent and more direct subway service to the outer sections of Queens not now directly served by rapid transit.

The connection to the present Queens Boulevard subway will permit the full coordination of existing IND services with the proposed added services. It will be constructed along 41st Avenue.

Additional Express Track for Queens Boulevard Line — **$70**

This single high-speed express track will double express rush-hour capacity and permit Queens Boulevard trains to run non-stop from Forest Hills to Queens Plaza, thus freeing the existing tracks for additional trains. The track will be constructed economically along the LIRR right-of-way between Forest Hills and Queens Plaza, and will feed into the 53rd Street route at Queens Plaza. A second connection to the 63rd Street tunnel is also recommended.

Northeastern Queens Line — **$150**

A new two-track northeastern Queens Line will branch from the Queens Boulevard subway in the Elmhurst-Woodhaven Boulevard area and extend along the Long Island Expressway corridor to the Queens College-Fresh Meadows area, providing direct service to this intensely developed section for the first time. Located in this corridor are several high-rise apartment developments including Lefrak City, Fresh Meadows, Pomonok Houses and Electchester, as well as several large schools including Queens College (24,000 students) and St. John's University (13,000 students).

Southeastern Queens Line — **$100**

A two-track southeastern Queens Line will be extended from the Queens Boulevard Line at Van Wyck Expressway and Hillside Avenue. A short connection will be built to the LIRR Atlantic Branch which the new route will follow as far as Springfield Boulevard. Two new tracks will be added to the LIRR right-of-way for transit purposes. A station will be built adjacent to the LIRR Jamaica station for interchange of passengers between LIRR, subway and JFK Airport trains.

This line will serve areas of southeastern Queens remote from subway lines, such as the large-scale housing development at Rochdale Village. Travel times to Manhattan and other parts of Queens will be significantly reduced.

Cost (millions)

Nostrand Avenue Subway Extension, Brooklyn **$60**

The Nostrand Avenue subway, now terminating at an inadequate and inefficient station at Flatbush and Nostrand Avenues will be extended via Flatbush Avenue to a new, modern terminal at Avenue U. This extension will serve a growing area now remote from direct subway service. The construction of a modern terminal will reduce delays and improve operating efficiency. An important benefit will be to reduce travel time to this part of Brooklyn.

New Lots Line Extension, Brooklyn **$12**

The New Lots Line will be extended through or adjacent to the existing overhead storage yard to a modern terminal three blocks south of the present yard limits at Flatlands Avenue and Linwood Street. Although located in an area zoned for manufacturing, the new terminal will be architecturally attractive. This extension will provide better access to the housing, hospital, educational, industrial and recreational areas now rapidly expanding in the Spring Creek area of Brooklyn.

Rogers Avenue Junction Reconstruction —

In advancing the New Lots and Flatbush Avenue extensions, we recommend the removal of the bottleneck at the junction between the Nostrand Avenue and New Lots Lines at Rogers Avenue, east of the Franklin Avenue station. An inefficient, awkward track layout, together with the need to cross trains in front of one another, now results in considerable delay at this point. Moreover, this junction restricts the capacity of the IRT lines in Brooklyn. The reconstruction of this junction to provide a grade-separated, smoother, more efficient junction is necessary to speed up Brooklyn subway service and to provide the capacity needed for full service to the Nostrand Avenue and New Lots Lines. This project could be included as part of the Transit Authority's continuing rehabilitation program.

Additional New Subway Cars **$28**

Approximately 200 high-speed subway cars will be required to serve the new extensions on the Queens - Brooklyn Lines. New cars will be capable of high performance and speeds up to 80 mph. They will provide up-to-date amenities including year-round temperature controls, better seating and other conveniences to satisfy modern travel demands.

LIRR CAR REPLACEMENTS PHASE ONE

Rail Improvements (LIRR)

Extension of Electrification **$14**

Presently MCTA has under way a federally aided modernization of the existing LIRR electrification. This project also extends electrification 6.3 miles on the Main Line from Mineola to Hicksville and 9.8 miles on the Port Jefferson Branch from Hicksville to Huntington. As part of the first priority program, the electrification will be further extended from Huntington to Northport (5 miles) on the Port Jefferson Branch and from Hicksville to Pinelawn (7.6 miles) on the Main Line. In addition, high-level platforms will be constructed at all of the stations along the newly electrified routes to permit use of the new cars.

Purchase of 350 New Cars **$84**

Presently MCTA has ordered 270 new high-speed, air-conditioned electric cars as the first stage of its equipment modernization program. These cars are under construction and are scheduled for delivery in the fall of this year. As part of the first priority program, 350 additional cars of identical modern design will be

Cost (millions)

purchased. This will provide modern, air-conditioned electric car service to *all* stations in the electrified zone including the new extension described above. It will permit the Rail Road to discontinue use of all pre-World War II cars in the expanded electrified zone.

Yard and Shop Expansion **$60**

To maintain and store the new cars properly and to utilize the newly electrified trackage, the LIRR's yard and shop facilities will be expanded. At strategic locations throughout the electrified zones, new facilities will be constructed to meet these needs.

Signal Improvements **$20**

To permit operation of more trains at faster speeds and with greater safety, a highly sophisticated automatic train control system will be installed including modernization of interlockings and expansion of centralized traffic control. An operations control center will also be provided to improve operating efficiency and allow greater flexibility to reduce delays.

Track Improvements **$25**

The new cars being purchased have a much greater performance capability than present equipment, including speeds of 100 mph. To best utilize this potential, improvements to the track and roadbed will be made throughout the electrified zone.

Jamaica Modernization **$13**

Jamaica is presently a bottleneck causing severe speed restrictions, primarily because of the need for passengers to change at that point between diesel and electrified services. With the new electrification, new electric cars, and possible use of dual-powered cars, most commuters can be delivered directly without change. Therefore, the trackage at Jamaica will be streamlined to permit all trains to operate through this area with greater dispatch.

Airport Access

LIRR Service to John F. Kennedy Airport **$100**

This proposed link is of vital importance because of its profound effect upon the future of the city as an international, commercial, financial and transportation hub.

JFK Airport has become almost impossible to reach by highway in peak periods, a situation that will worsen in the coming years. Larger aircraft carrying up to 500 passengers are scheduled to go into service in the near future and will further overtax existing ground transportation facilities. Nearly 20 million passengers used Kennedy Airport last year, and this number is expected to double by 1975. Further, the airport as an employment center continues to grow in importance. There are more than 35,000 jobs at JFK now, and estimates indicate this number will double in the next 15 years.

Construction of a new direct rail link is recommended from the LIRR Atlantic Branch, running some three and a half miles to the terminal area, in order to insure the continued viability of the airport. This link will permit dependable, frequent and convenient service from midtown Manhattan (approximately 20 minutes) with the additional potential of attracting airport users from Queens, Brooklyn and Long Island points via Jamaica. Detailed alignments of this route have not yet been determined. However, it appears that the most feasible route that minimizes

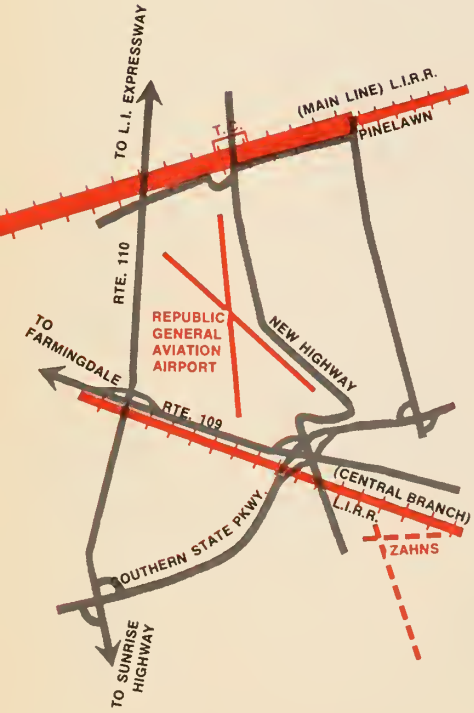
Cost (millions)

the taking of private property and avoids community disruption is through the Baisley Pond Park area.

A structure of modern architectural design can make this facility completely compatible with its surroundings.

Modern aerial rail structure in a landscaped linear park, San Francisco Bay Area, is example of rail design which is compatible with surroundings.

Transportation Centers



Development of a Transportation Center at Republic Airport **$25**

The project includes acquisition of Republic and Zahn's Airports and additional adjacent lands necessary to maximize the potential for an air-rail-bus-auto-taxi transportation center. It is proposed to phase out use of Zahn's as an airport so that this site may be developed for an appropriate alternate use.

Development of the Republic Airport complex will provide one of the finest examples of a modern primary general aviation airport and integrated transportation center in the nation. The need for improved and expanded aviation facilities in the New York metropolitan area is well documented. Indeed, part of the solution to the region's major commercial jetport needs lies in the development of facilities such as Republic to relieve congestion at the major airports.

This facility will provide direct mass transportation service to the industrial heartland of western Suffolk County, providing an opportunity for excellent rail travel to Manhattan as well as reverse commutation. LIRR express running time from Manhattan to Republic will be 30 minutes.

In addition to land acquisition, the project involves improvement of airport operations and terminal facilities (for example, navigational and traffic control) and multi-modal passenger facilities. It also includes improved access to the railroad station from the airport, additional automobile parking space and improved road access and traffic circulation.

EASTERN CORRIDOR

DESCRIPTION OF PROJECTS

PHASE TWO

Transit Expansion

Cost (millions)

Added Extension of Northeast Queens Subway — **$85**

To meet the continuing growth in outer Queens, the northeast Queens subway will be extended from the Queens College-Fresh Meadows area to a terminal at Springfield Boulevard.

Jamaica Area Improvements — **$50**

The old BMT elevated will be razed in the business district of Jamaica and its service incorporated with the new southeastern Queens route. Transit service will also be extended east of Jamaica to the vicinity of Hollis. These improvements are needed for better access to Jamaica, which is expected to grow in office, retail and educational activities, and to coordinate the many rapid transit, rail, airport access and bus routes converging in Jamaica. Demolition of the elevated along Jamaica Avenue will help revitalize the heart of this sub-center. These improvements should be coordinated with redevelopment plans for the area.

Additional Air-conditioned Cars — **$42**

Purchase of 300 new high-speed cars will be required to meet the expansion needs of subway lines in this sector.

Expansion of Yards and Shops — **$40**

Expanded yard and shop facilities will be required to service the expanded fleet and extended systems.

Rail Improvements (LIRR)

Extension of Electrification — **$48**

To complete the electrification program, three additional extensions will be undertaken. These are completion of the Port Jefferson Branch from Northport to Port Jefferson (18 miles); extension along the Main Line from Pinelawn to Ronkonkoma (16 miles); and extension via the Central Branch from Bethpage to Patchogue on the Montauk Line (24 miles). High-level station platforms will also be constructed at all the newly electrified points to complete the program.

Purchase of 500 New Cars — **$123**

Up to 250 new cars of identical design to the 620 already discussed will be purchased to serve the newly electrified lines and to provide for future traffic growth. In addition, up to 250 new 68-foot long cars capable of operating over

Cost (millions)

the subway system will be purchased to provide for direct access to lower Manhattan, as discussed in the Central Business District section of this report.

Purchase of 150 Dual-powered Cars **$55**

New self-propelled equipment will be purchased for present diesel-powered territory, preferably dual-powered (e.g., a gas turbine-electric car which can serve both electric and non-electric territory) to completely modernize all Long Island Rail Road service covering the entire Island.

System Improvements **$45**

Additional improvements will be made to the yards and shops, signal system, stations and track to completely develop the potential of the new equipment and electrification extensions.

Transportation Centers

Three Additional Transportation Centers along the Main Line of the LIRR **$25**

A transportation center at Hicksville will serve commuters from as far north as Oyster Bay and as far south as Levittown. The present importance of this station in the Long Island Rail Road's transportation system. its excellent access and its potential as a major suburban center are part of the area's attributes.

A Pine Aire transportation center will provide express rail service to commuters from the fast growing communities in Huntington, Babylon, Islip and Smithtown. Located about seven miles east of Republic, Pine Aire has excellent highway access.

A transportation center at MacArthur Airport in the vicinity of Ronkonkoma is proposed to serve the anticipated population growth of central Suffolk. The tributary area for this center is expected to have the sharpest population increase of any section of Long Island. By 1985 it should reach over 250,000. The site would be located at MacArthur Airport, an important commercial facility.

General Aviation **$20**

Additional general aviation airports will be required on Long Island to meet anticipated aviation demands over the years. MCTA generally endorses the Tri-State Transportation Commission's recommendations on general aviation airports and proposes the following, recognizing that no specific sites are yet determined:

- A limited capacity airport, in Suffolk County, approximately equidistant between Republic and MacArthur Airports, will ultimately be needed to relieve the proposed Republic Airport of future instructional and recreational flight activities.
- A similar limited-use airport will eventually be required in northeast Suffolk to relieve anticipated pressures on existing airfields in eastern Long Island.

NORTHERN CORRIDOR

NORTHERN CORRIDOR MANHATTAN-BRONX SECTOR

TRANSIT EXPANSION PROGRAM

	PHASE ONE	PHASE TWO
New Rapid Transit Line or Extension		
Existing Line to be Rehabilitated		
Existing Junction to be Reconstructed		
Existing Elevated Line to be Removed		

RAIL IMPROVEMENT PROGRAM

	PHASE ONE	PHASE TWO
Existing Rail Line to be Modernized and Re-equipped		
Rail Line to be Extended		
Existing Station to be Modernized		

AVIATION AND TRANSPORTATION CENTERS — Transportation Center

NORTHERN CORRIDOR

RAIL IMPROVEMENT PROGRAM

	PHASE ONE	PHASE TWO
Existing Rail Line to be Modernized and Re-equipped	++++++	++++++
Electrification to be Extended	//////	//////
Rail Line to be Extended		+++++
Express Track to be Constructed	●●●●●●	

AVIATION AND TRANSPORTATION CENTERS

	PHASE ONE	PHASE TWO
Transportation Center	○	○
General Aviation Airport	✈	
General Aviation Airport Specific Site Not Determined		✈

NORTHERN CORRIDOR

DESCRIPTION OF PROJECTS

PHASE ONE

Transit Expansion

Cost (millions)

Second Avenue Subway—63rd Street, Manhattan, to 138th Street, the Bronx **$150**

First priority has been given to the construction of the Second Avenue subway north from the midtown area to the Bronx, because this section is urgently needed to relieve the Lexington Avenue subway and break the East Side bottleneck. This project will provide the added capacity needed for improved rapid transit service to the Northern Corridor. It will reduce overcrowding on the Lexington Avenue and Bronx subway lines and will permit more reliable and faster schedules to the outer sections of the northern Bronx.

In the lower Bronx, the recommended route will be a high-speed express bypass built adjacent to the existing Pelham Bay subway under 138th Street. The Brook Avenue station will be reconstructed to permit an across-the-platform transfer between Second Avenue and Lexington Avenue trains.

The amount of money indicated for the Second Avenue subway will permit the construction of a basic two-track subway, with extra tracks as required for efficient operation, expandable at some future time to four tracks. An analysis of the passenger loads carried on the present subways shows that a two-track facility can significantly reduce present overcrowding. The expenditure of the extra money — over $200 million — needed to develop a full four-track facility is not possible at this time without drastically curtailing the scope of the Queens and Brooklyn programs.

Second Avenue Extension to Dyre Avenue, the Bronx **$60**

The Second Avenue Line will then continue from a portal east of Bruckner Boulevard as a two-track, high-speed bypass following the abandoned roadbed of the defunct New York, Westchester & Boston Railroad. This route, which will be relatively inexpensive to construct, will extend some three miles northward to a junction with the Dyre Avenue Line at East 180th Street and the Pelham Bay Line at Whitlock Avenue. The Dyre Avenue Line station platforms will be adapted to accommodate the new Second Avenue trains.

As part of this project, the White Plains Road Line will be relocated in the vicinity of East 177th Street to eliminate several sharp curves and to achieve convenient, across-the-platform transfer between White Plains Road and Second Avenue trains at East 180th Street. Thus the upper White Plains Road Line will be an effective feeder to the Second Avenue Line, and travel time from East 241st Street will be reduced.

Second Avenue Line Connection to Upper Pelham Line **$19**

The Upper Pelham Bay Line will be incorporated into the Second Avenue Line by means of a new connection near Whitlock Avenue. The lower portion of the

Cost (millions)

Pelham Bay Line will provide improved service in the lower Bronx via the Lexington Avenue route, while faster service is offered to the Upper Pelham Bay Line from the Second Avenue line by using longer stretches of the high-speed route. To accommodate wider and longer Second Avenue trains, station platforms must be cut back and lengthened.

Second Avenue trains could alternate between Dyre Avenue and Pelham Bay Park terminals.

149th Street Junction Improvements —

In addition to Second Avenue subway improvements in the Bronx, we recommend the reconstruction of the IRT subway junction at 149th Street to eliminate slow-speed, hairpin curves used by Lexington Avenue-White Plains Road trains, reduce delays, increase system capacity and reduce operating and maintenance costs.

This project could be included as part of the Transit Authority's continuing rehabilitation program.

Air-conditioned Cars $42

Approximately 300 new high-speed air-conditioned subway cars will be needed for service on extensions in upper Manhattan and the Bronx.

Rail Improvements

Modernization of New Haven Railroad Commuter Service $43*

Together with the Connecticut Transportation Authority and using Federal aid already granted, the New Haven Railroad commuter service will be secured and completely modernized. The program includes purchase of up to 144 new high-speed, air-conditioned electric cars similar to those being acquired for the LIRR; rehabilitation of 100 existing air-conditioned electric cars; station modernization, including all high-level platforms in electrified territory; and modernization of the electrification, installation of an automatic train control system and track rehabilitation. The total cost of the bi-state program, including an allowance for possible purchase, is $104 million. New York State's share of this is $43 million, which would be reduced with the addition of Federal funds, of which $12.4 million has already been granted.

*Includes Federal funds

Modernization of New York State Portion of Penn Central Railroad Commuter Service $80

To provide modern, air-conditioned electric car service to all of the electrified trackage of the Penn Central, 130 new high-speed, air-conditioned electric cars like those being purchased for the LIRR will be needed. Electrification will be extended 28 miles from North White Plains to Brewster on the Harlem Division, and the electrified system will be modernized to provide for greater performance capability. High-level platforms will be constructed at all of the stations served by the new cars.

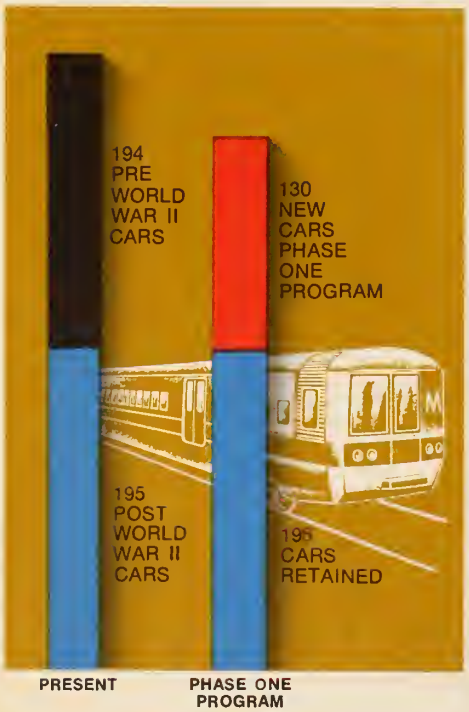
An express third track will be constructed between Mt. Vernon and North White Plains to provide high-speed service to the area served by the new electrification. An automatic train control system — similar to the one proposed for the New Haven — will be installed from New York City to Brewster for purposes of greater capacity, speed and safety.

Modernization of the New York State Portion of the Erie Lackawanna Railroad $2

In conjunction with a similar program now under way by the State of New Jersey, it is proposed that New York provide new equipment to modernize the existing rail commuter service of the Erie Lackawanna Railroad in Rockland and Orange Counties. This line has potential in this growth area of the region.

NHRR CAR REPLACEMENTS

PCRR CAR REPLACEMENTS



Cost (millions)

It is proposed to study use of dual-powered, self-propelled cars to provide future high-speed commuter service from all communities along the Erie Lackawanna Main Line and the New Jersey and New York branch. It is also proposed to study the feasibility of operating this service directly to Pennsylvania Station in Manhattan by means of suitable track connections in the vicinity of Secaucus, New Jersey. It is assumed the cost of this track connection will be shared by the two states.

Transportation Centers and General Aviation — $32

General Aviation Airport — Northwest Westchester

Westchester County recently lost an important general aviation facility at Armonk due to construction of Interstate Highway Route 87 and relocated Route 22. A replacement of this facility should be located in northwest Westchester, where it could also help serve Putnam County airport needs. Several sites are being evaluated by MCTA and Westchester County. The most favorable site lies south of Route 6 in northwest Somers. A second site under review having some merit would be located partly on filled land just west of the Penn Central Railroad at Croton-Harmon.

Rye

Provides interchange with New Haven Railroad commuter service, Interstate Highways 95 and 287, and possibly Northeast Corridor rail service between New York and Boston.

White Plains Area

Provides interchange with Penn Central Harlem Division and Interstate Route 287.

Tarrytown

Good access to a transportation center in Tarrytown will be provided via Route 9, Interstate 287 and the New York State Thruway. The center will serve west central Westchester and some commuters from Rockland.

Spring Valley

The central Rockland area, west of the Hudson, will be served by this transportation center, which provides interchange between the New Jersey and New York branch of the Erie Lackawanna Railroad, Interstate Highway 287, local and express bus service to New York.

A general aviation airport capable of handling the present and future needs of Rockland and southern Orange Counties and adjoining areas should be located in central Rockland. It should be provided with excellent access to the Spring Valley transportation center as well as the area's major highways.

Pearl River

The south central sector of Rockland County will be served by a major center for rail and express bus service, located at a point where the new State Route 304 crosses the New Jersey-New York branch of the Erie Lackawanna Railroad, just north of the local business district.

Orangeburg

The southeastern sector of Rockland County will be served by a highway, bus and possibly rail center near the intersection of Route 303 and the Palisades Parkway. This center will be near the rights-of-way of the Penn Central and the Erie Lackawanna Railroads, offering a potential for possible future commuter rail service.

NORTHERN CORRIDOR

DESCRIPTION OF PROJECTS

PHASE TWO

Transit Expansion

Cost (millions)

Concourse Line Extension to Northeast Bronx — $19

A short 0.6 mile extension of the Concourse subway to a new terminal and transfer station at White Plains Road is recommended to provide better access to the northeast Bronx. The transfer connection to the White Plains Road Line will result in better coordination of Bronx transit services and improve travel between the east and west Bronx.

Third Avenue Elevated Replacement — $95

The Third Avenue elevated is a slow, obsolete, blighting structure, much of it built before the turn of the century. The present service is a shuttle operation which is unsatisfactory, requiring an inconvenient transfer at 149th Street. The Third Avenue elevated will be replaced with a modern rapid transit line with through service to Manhattan. It is recommended that this be done by constructing extra trackage adjacent to the Penn Central Railroad on Park Avenue. The replacement transit route could connect with either the new Second Avenue subway or the existing IRT subway.

Efforts should be undertaken to coordinate this replacement with a renewal program to improve the environment of the Third Avenue-Park Avenue corridor. This might include covering over the exposed railroad cut. The renewal program will require separate financing.

Extension of Pelham Line to Co-op City — $20

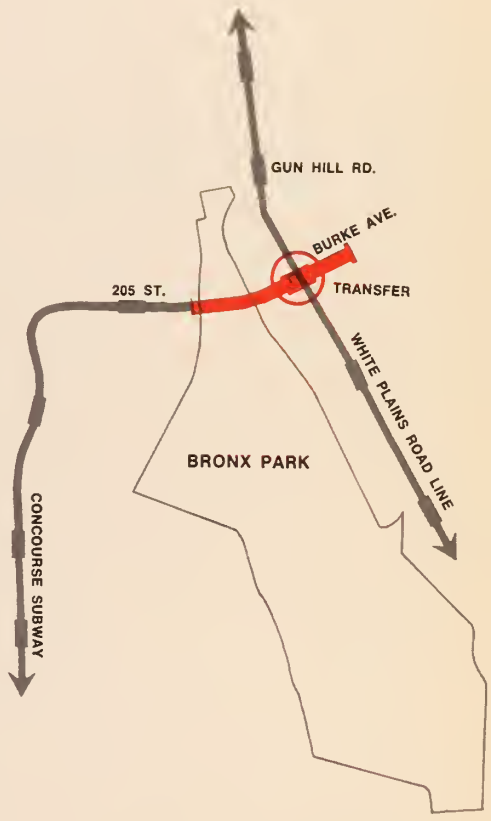
The huge Co-op City development, which will house some 50,000 people, will require improved transportation facilities. A direct link to Co-op City is proposed by extending the converted Pelham-Second Avenue Line from the present station at Pelham Bay Park to a modern terminal located within the housing complex.

New Air-conditioned Cars — $28

Purchase of 200 high-speed subway cars will be required to serve the major transit expansions in the Upper Manhattan-Bronx Area.

Expansion of Shops and Yards — $60

Expansion of shop and yard facilities will be needed to service the enlarged fleet of cars.



Cost (millions)

Rail Improvements

Completion of Modernization of Penn Central Railroad Commuter Service **$34**
On the Hudson Division, electrification will be extended to Peekskill; new, high-speed electric cars will be purchased, the signal system modernized and a new train control system will be installed. Also, the purchase of 25 dual-powered cars is required for the remaining non-electrified service. Finally, construction of a new subway-rail-bus transportation center at 149th Street in the Bronx is recommended.

Completion of Modernization of Erie Lackawanna Railroad (New York portion) **$10**
To provide for future growth of the area west of the Hudson, approximately 25 dual-powered self-propelled cars will be purchased. This will make possible a high-speed commuter service from all communities along the Erie Lackawanna Main Line and the New Jersey and New York Branch. To permit direct service to Penn Station, a new track connection would be required as part of a joint effort by the States of New Jersey and New York.

Transportation Centers **$13**

Brewster
The Brewster transportation center will provide interchange with the Penn Central Harlem Division and Interstate Highways 84 and 87.

New City
This center will provide bus terminal and related transportation center facilities along Route 304, north of the New City business district.

Beacon
This will provide interchange with Penn Central Hudson Division and Interstate 84.

Suffern
A transportation center in this area will provide interchange between the Main Line of the Erie Lackawanna Railroad, Interstate 287, the N.Y. State Thruway, and express bus service to New York.

Goshen
An interchange between the Main Line of the Erie Lackawanna Railroad, Interstate 84, Route 17 Quickway and bus service to New York will be provided.

Additional centers as needed

General Aviation **$15**

Additional general aviation airports will be needed to support instructional, recreational and limited business activities at existing airports as well as those already proposed by MCTA. Such an airport should be provided for southwest Dutchess, to serve that county and nearby Putnam County areas. As population growth and recreation activities in the northern sector increase, additional airports may be required.

SOUTHERN CORRIDOR

MANHATTAN
N
METROPOLITAN
Municipal Ferry
St. George
Bus, Rail, and
Ferry Terminal
RICHMOND
Grasmere
Verrazano-
Narrows Bridge
STATEN ISLAND
Staten Island Rapid Transit Railway (SIRT)
Great Kills
Tottenville
SOUTHERN CORRIDOR RICHMOND
PHASE ONE
PHASE TWO
Existing Rapid Transit Line to be Rehabilitated and Re-equipped
Continued Transit Modernization and Possible Expansion
0 1 2 3 4 5
Miles

SOUTHERN CORRIDOR

DESCRIPTION OF PROJECTS

PHASE ONE

Cost (millions)

Transit Expansion

Staten Island Rapid Transit Railway (SIRT) **$25**

The SIRT is an electrified, grade-separated rapid transit line extending the full 14-mile length of Staten Island. The railroad was last modernized and re-equipped in 1925, and is in dire need of rehabilitation. The present over-age cars will be replaced, the electrical system will be modernized, and improvements to the signal system, roadbed and stations will be made. The result will be a modern, high-speed, rapid transit line.

If major investments are made, it will be necessary to secure such capital investment by acquiring the line or otherwise insuring its long-term operations. The City of New York currently leases the line and subsidizes its operation by the private Staten Island Rapid Transit Railway Company — a subsidiary of the C&O/B&O railway system.

Staten Island is the last area within the boundaries of New York City that is still relatively undeveloped. Substantial growth is expected over the next few decades, with a predicted doubled population and employment by 1985.

Staten Island Rapid Transit Railway provides the only rapid transit service for New York City's rapidly growing "last frontier." It requires replacement of obsolete rolling stock and modernized equipment.

SOUTHERN CORRIDOR

DESCRIPTION OF PROJECTS

PHASE TWO

Transit Expansion	Cost (millions)
Staten Island Rapid Transit Railway (SIRT)	**$10**

It is also proposed to explore the possibility of additional service to meet the long-term growth of the Island. Funds will also be needed to purchase new cars and facilities.

In the immediate years ahead, population increases and densities are not expected to require major new construction; however, planning will be undertaken looking to the future when a high-speed, direct rail tunnel link to Manhattan will provide for the needs of this Corridor to the year 2000.

MANHATTAN CENTRAL BUSINESS DISTRICT

Park Ave.
Lexington Ave.
Second Ave.
59 St.
63 St.
57 St.
58 St.
Tenth Ave.
Third Ave.
Eleventh Ave.
Sixth Ave.
48 St.
Metropolitan Transportation Center
Grand Central Terminal
42 St.
Ninth Ave.
E-L RR via PRR
LIRR
34 St.
Penn Station
Seventh Ave.
East River
Second Ave.
Hudson River
Canal St.
Water St.
Lower Manhattan Terminal
Broad St.
Whitehall St.
LIRR
Flatbush Ave.
N
E
METROPOLITAN
0
1
Miles

CENTRAL BUSINESS DISTRICT

	PHASE ONE	PHASE TWO
TRANSIT EXPANSION PROGRAM		
New Rapid Transit Line or Extension		
New Midtown Distribution System		
RAIL IMPROVEMENT PROGRAM		
Existing Rail Line to be Modernized and Re-equipped		
Rail Line to be Extended		
Existing Station to be Modernized		
TRANSPORTATION CENTER		
Transportation Center		

MANHATTAN CENTRAL BUSINESS DISTRICT

DESCRIPTION OF PROJECTS

PHASE ONE

Transit Expansion

Cost (millions)

Second Avenue Subway, 63rd Street to 34th Street — **$70**

This section of the Second Avenue subway is needed to provide additional service in the growing East Midtown area. It makes available added track capacity necessary to accommodate the new services from the Bronx and Queens. This will give Queens direct access to an East Side route via a connection with the 63rd Street tunnel.

63rd Street Crosstown Connections — **$130**

A crosstown subway will be constructed under 63rd Street connecting the end of the new tunnel at York Avenue with the new 57th Street station of the Sixth Avenue subway and to the 57th Street station of the BMT at Seventh Avenue.

Also included in the project are two connections to the Second Avenue subway. The southerly one will allow Queens trains to turn south into lower Second Avenue. The northerly one will permit Bronx trains to turn west, via 63rd Street, and south into the BMT Broadway-Seventh Avenue subway. The northerly connection will provide a convenient east-west service, enabling passengers to travel between the upper East Side residential areas and the West Side of the midtown business district without transfer, and will provide, for the first time, direct access to the West Side for riders from the Pelham Bay Line. It will also provide a route to lower Manhattan via the BMT line for Second Avenue trains before the Phase Two extension of the Second Avenue line to lower Manhattan is constructed.

Rail Improvements

New East Midtown Terminal for LIRR — **$195**

Connections will be provided in Queens to the new 63rd Street tunnel and in Manhattan from the tunnel to a new East Midtown terminal for the LIRR under Third Avenue in the vicinity of 48th Street. The terminal will be developed as part of the Metropolitan Transportation Center, described below.

Metropolitan Transportation Center — —

It is further proposed to develop a full block in East Midtown Manhattan as a Metropolitan Transportation Center, which will not only include the East Side terminal of the Long Island Rail Road, but an East Midtown air terminal for high-speed access to Kennedy Airport via the Long Island Rail Road and a major interchange point for east-west movement of people via a midtown distribution system proposed for Phase Two.

The area above the essential floors needed for these purposes and for bus and

Cost (millions)

taxi access and parking will be developed for office use. Rental of such space will cover the cost and development of the expanded center.

The center will provide for pedestrian access from the Lexington and Second Avenue subways, the Long Island Rail Road, the Penn Central and the New Haven Railroads via a new north end access to Grand Central Terminal (discussed below) and the midtown distribution system. The center will provide facilities for passengers, baggage handling, mail handling, airline ticketing, and the like necessary for present day and future air terminal usage.

From this transportation center, a passenger will be able to check his baggage, purchase his ticket and be assured that this will be a scheduled and reliable link in his journey. He will be able to travel swiftly and directly to Kennedy Airport without bothering about his baggage until he reaches his final destination.

This center will lessen the demand for JFK Airport terminal and parking facilities, as many passengers will have already checked in and begun their journey.

This Metropolitan Transportation Center will result in a more integrated transportation network, coordinating modernized high-speed railroads, subways, "new technology" pedestrian movement and air service.

Brooklyn Terminal Improvements for LIRR — $5

In preparation for the Phase Two extension of LIRR service to lower Manhattan, improvements will be made to the existing facilities to provide for full utilization of the new cars and improve the operations.

Penn Station Improvements for LIRR — $6

These improvements will provide for greater utilization of ten-car trains of the new cars at all LIRR platforms to meet the immediate needs of this terminal. Future growth projections indicate that this station will always be heavily used.

North End Access at Grand Central Terminal — —

The Penn Central will be asked to provide north end access in the vicinity of 48th Street from the existing station platforms at Grand Central Terminal. This will provide a much shorter walk for commuters going north and will also relieve crowding and congestion in the existing concourses.

MANHATTAN CENTRAL BUSINESS DISTRICT

DESCRIPTION OF PROJECTS

PHASE TWO

Transit Expansion

Cost (millions)

Second Avenue Subway, East 34th Street to Whitehall Street **$115**

The extension of the Second Avenue line southward from a temporary terminal at East 34th Street to a new terminal under Water Street near Whitehall Street in downtown lower Manhattan will complete the Second Avenue line. It will provide a new link between Midtown and Downtown Manhattan, serve the burgeoning office developments along or near Water Street, accommodate the growing East Side residential areas below 34th Street, and provide a fast, direct route to lower Manhattan for Queens trains.

The extension will pass through the Grand Street station of the Chrystie Street subway, which will be enlarged, as provided in the design of that station. Passengers from the BMT system in Brooklyn will be able to make an across-the-platform transfer to Second Avenue trains at Grand Street. Transfer to other Brooklyn and crosstown routes will also be possible at Houston Street and at 14th Street.

As in the case of the upper Second Avenue line, the money shown is adequate to construct a two-track facility, with provision for expansion to four tracks north of Grand Street if ever required in the future.

New Midtown Distribution System **$250**

While all of the new access routes will improve delivery to Manhattan, the problem still remains of improving circulation within the Central Business District itself. This is especially true in mid-Manhattan which is spread out over a wider area than the highly concentrated downtown financial district.

The subway and rail systems serve their functions well as high-capacity, line-haul services. However, conventional rail systems cannot fulfill the need for relatively short journeys ranging over a span of a few city blocks. On the other hand, travel on the surface street network, either by bus or taxi, is slow and often barely exceeds walking speeds. A new system is proposed to meet this midtown distribution problem. Technology has now progressed to the point where it is feasible to design and develop a system for this purpose. Four linked routes on 57th, 48th, 42nd and 33rd Streets are proposed. These will provide easy distribution from all of the midtown commuter terminals, both rail and bus, as well as interconnect all of the trunk-line subways.

The type of system envisioned would basically augment the pedestrian function. It must be available on a 24-hour-a-day, 7-day-a-week basis without long waits for service. The possibility of using high-speed conveyors, small rail cars, or some form of automated guided car system, such as was once proposed as a

Cost (millions)

replacement for the 42nd Street shuttle, will be investigated, as will an alternative approach which would extend the Second Avenue subway across 48th Street to a West Side terminal. The new midtown distribution system will expand the area served by rapid transit including the presently under-developed western part of the area.

Rail Improvements

Extension of LIRR Service to Lower Manhattan $65

Suitable connections from the Brooklyn line of the LIRR into the subway system will provide direct service from Long Island to the Wall Street area. This will require 250 new cars discussed above, and complete the Long Island Rail Road CBD terminal program which will deliver riders more closely to their jobs.

Complete Penn Station Improvements $11

Additional passenger and train facilities will be provided to serve the future growth and continued use of this strategically located terminal.

METROPOLITAN TRANSPORTATION CENTER
TO LEXINGTON AVE. SUBWAY AND GRAND CENTRAL STATION
AIRLINE TICKETS
AIR TERMINAL FOR JFK AIRPORT
MIDTOWN DISTRIBUTION SYSTEM
CONVEYOR TO EAST SIDE
Rudolph Assoc. nyc

PRELIMINARY CONCEPT OF

METROPOLITAN TRANSPORTATION CENTER

ORDER OF MAGNITUDE COST ESTIMATES

ORDER OF MAGNITUDE COST ESTIMATE

(Summary By Programs)

(Cost in millions)

Program	PHASE One	PHASE Two	Total
Transit Expansion	$ 961	$ 814	$1775
Rail Improvement	547	391	938
Transportation Centers	8	38	46
Mass Transit Total	$1516	$1243	$2759
Gen. Aviation/Airport Access	149	35	184
Program Total	$1665	$1278	$2943

(Summary By Corridors)

EASTERN CORRIDOR

Transit Expansion	$ 465	$ 217	$ 682
Rail Improvement	216	271	487
Transportation Centers	—	25	25
General Aviation/Airport Access	125	20	145
Total	$ 806	$ 533	$1339

NORTHERN CORRIDOR

Transit Expansion	$ 271	$ 222	$ 493
Rail Improvement	125	44	169
Transportation Centers	8	13	21
General Aviation	24	15	39
Total	$ 428	$ 294	$ 722

SOUTHERN CORRIDOR

Transit Expansion	$ 25	$ 10	$ 35
Total	$ 25	$ 10	$ 35

CENTRAL BUSINESS DISTRICT

Transit Expansion	$ 200	$ 365	$ 565
Rail Improvement	206	76	282
Total	$ 406	$ 441	$ 847

ORDER OF MAGNITUDE COST ESTIMATE

(By Program)

(Cost in millions)

Transit Expansion

EASTERN CORRIDOR	PHASE One	PHASE Two	Total
Queens approach to 63rd Street Tunnel	$ 45	$ —	$ 45
Additional express track for Queens IND	70	—	70
New northeast Queens subway line	150	85	235
New southeast Queens rapid transit line	100	—	100
Jamaica area improvements, extension of subway service eastward and removal of part of BMT El	—	50	50
Nostrand Avenue subway extension to a modern terminal	60	—	60
New Lots line extension to a modern terminal	12	—	12
Rogers Avenue junction improvement	*	—	*
Additional air-conditioned subway cars	28	42	70
Expansion of yards and shops	—	40	40
Total Eastern Corridor Transit	$465	$217	$682
NORTHERN CORRIDOR			
Second Avenue subway, 63rd Street to lower Bronx	$150	$ —	$150
Second Avenue Extension to Dyre Avenue, Bronx	60	—	60
Second Avenue Connection to Upper Pelham Line	19	—	19
Concourse Line Extension to Northeast Bronx	—	19	19
Third Avenue Elevated Replacement	—	95	95
Pelham Extension to Co-op City	—	20	20
149th Street IRT Improvements	*	—	*
Air-conditioned subway cars	42	28	70
Expansion of yards and shops	—	60	60
Total Northern Corridor Translt	$271	$222	$493

*Continuing Transit Authority rehabilitation program

ORDER OF MAGNITUDE COST ESTIMATE

(By Program)

Transit Expansion

(Cost in millions)

SOUTHERN CORRIDOR	PHASE One	PHASE Two	Total
Rehabilitation and re-equipment of the Staten Island Rapid Transit Railway (SIRT) Tottenville line	$ 25	$ —	$ 25
Additional rehabilitation of the SIRT	—	10	10
Total Southern Corridor Transit	$ 25	$ 10	$ 35
CENTRAL BUSINESS DISTRICT			
63rd Street crosstown subway including connection to Sixth, Seventh and new Second Avenue subways	130	—	130
Second Avenue subway, 63rd Street to vicinity of E. 34th Street	70	—	70
Second Avenue subway, E. 34th Street to Whitehall Street	—	115	115
New CBD distribution system in the vicinity of 33rd, 42nd, 48th and 57th Streets	—	250	250
Total CBD Transit Expansion*	$200	$365	$565

*cars, yards and shops included in corridor estimate.

ORDER OF MAGNITUDE COST ESTIMATE

(By Program)

Rail Improvement

(Cost in millions)

EASTERN CORRIDOR	PHASE One	PHASE Two	Total
Long Island Rail Road Modernization —			
Extension of Electrification and High Level Platforms			
Huntington to Northport, Hicksville to Pinelawn	$ 14	$ —	$ 14
Northport to Port Jefferson, Pinelawn to Ronkonkoma, Bethpage to Patchogue	—	48	48
Subtotal	$ 14	$ 48	$ 62
New High Speed, Air-conditioned Cars			
350 85′ electric cars	$ 84	$ —	$ 84
250 68′ electric cars for lower Manhattan service	—	63	63
150 gas turbine electric cars for non-electrified territory	—	55	55
250 85′ electric cars for future traffic	—	60	60
Subtotal	$ 84	$178	$262
System Improvements			
Yard and shop expansion	$ 60	$ —	$ 60
Signal improvements	20	20	40
Station improvements	—	5	5
Track improvements	25	20	45
Jamaica modernization	13	—	13
Subtotal	$118	$ 45	$163
Total Long Island Rail Road	$216	$271	$487
Total Eastern Corridor Rail	$216	$271	$487

ORDER OF MAGNITUDE COST ESTIMATE

(By Program)

Rail Improvement

(Cost in millions)

NORTHERN CORRIDOR	PHASE One	PHASE Two	Total
New Haven Railroad Modernization			
144 new high-speed electric cars	$ 36	—	$36
Rehabilitation of 100 existing 1954 electric cars	6	—	6
Station modernization including high-level platforms	9	—	9
Modernization of the electrical system including conversion to commercial frequency	9.1	—	9.1
Improved Shop and Maintenance Facilities	4.2	—	4.2
Modernization of the signal system; installation of train control system; and upgrading of track for higher speeds	15.7	—	15.7
Total NHRR Modernization Program	$ 80		
Acquisition	24		
Total NHRR Program	$104		
Total, New Haven Railroad, New York Share	$ 43	—	$43
Penn Central Railroad Modernization			
130 new high-speed electric cars	$30	$ —	$ 30
Modernization of existing electrical system	12	—	12
Station improvements including high-level platforms	5	2	7
Modernization of Harlem and Hudson Divisions signal system and installation of train control system	13	6	19
Extension of electrification to Brewster including high-level platforms	12	—	12
Extension of electrification to Peekskill including four additional cars	—	5	5
25 new high-speed gas turbine-electric cars for service in the non-electrified territory to Poughkeepsie and Dover Plains	—	10	10
New 149th Street Transportation Center	—	11	11
Third Track, Mt. Vernon to North White Plains	8	—	8
Total Penn Central Modernization	$80	$34	$114
Erie Lackawanna Railroad Modernization			
Purchase of new equipment to modernize service to Port Jervis	$ 2	$ —	$ 2
Direct track connection to Penn Station, New York State share, and purchase of 25 dual-powered, self-propelled cars	—	10	10
Total Erie Lackawanna Modernization	$ 2	$10	$ 12
Total Northern Corridor Rail Improvement Program	$125	$44	$169
CENTRAL BUSINESS DISTRICT			
Improved CBD Access for LIRR			
New east midtown terminal including connections to 63rd Street tunnel	$195	$ —	$195
Extension of Brooklyn service to Lower Manhattan	5	65	70
Penn Station improvements	6	11	17
Subtotal	$206	$76	$282
Improved CBD Access for the Northern Corridor			
North end access at Grand Central Terminal	*	—	*
Subtotal	*	—	*
Total CBD Rail Improvement Program	$206	$76	$282

*To be financed by Penn Central Railroad

ORDER OF MAGNITUDE COST ESTIMATE

(By Program)

Transportation Centers

(Cost in millions)

EASTERN CORRIDOR	PHASE One	PHASE Two	Total
Hicksville	—	$10	$10
Pine Aire	—	2	2
Ronkonkoma	—	3	3
Others	—	10	10
Total Eastern Corridor Transportation Centers	—	$25	$25
NORTHERN CORRIDOR			
Rye	$3	$ —	$ 3
White Plains area	2	—	2
Tarrytown	1	—	1
Brewster	—	1	1
Beacon	—	1	1
Suffern	—	1	1
Goshen	—	1	1
Pearl River	1	—	1
Orangeburg	1	—	1
New City	—	1	1
Additional Centers as needed	—	8	8
Total Northern Corridor Transportation Centers	$8	$13	$21

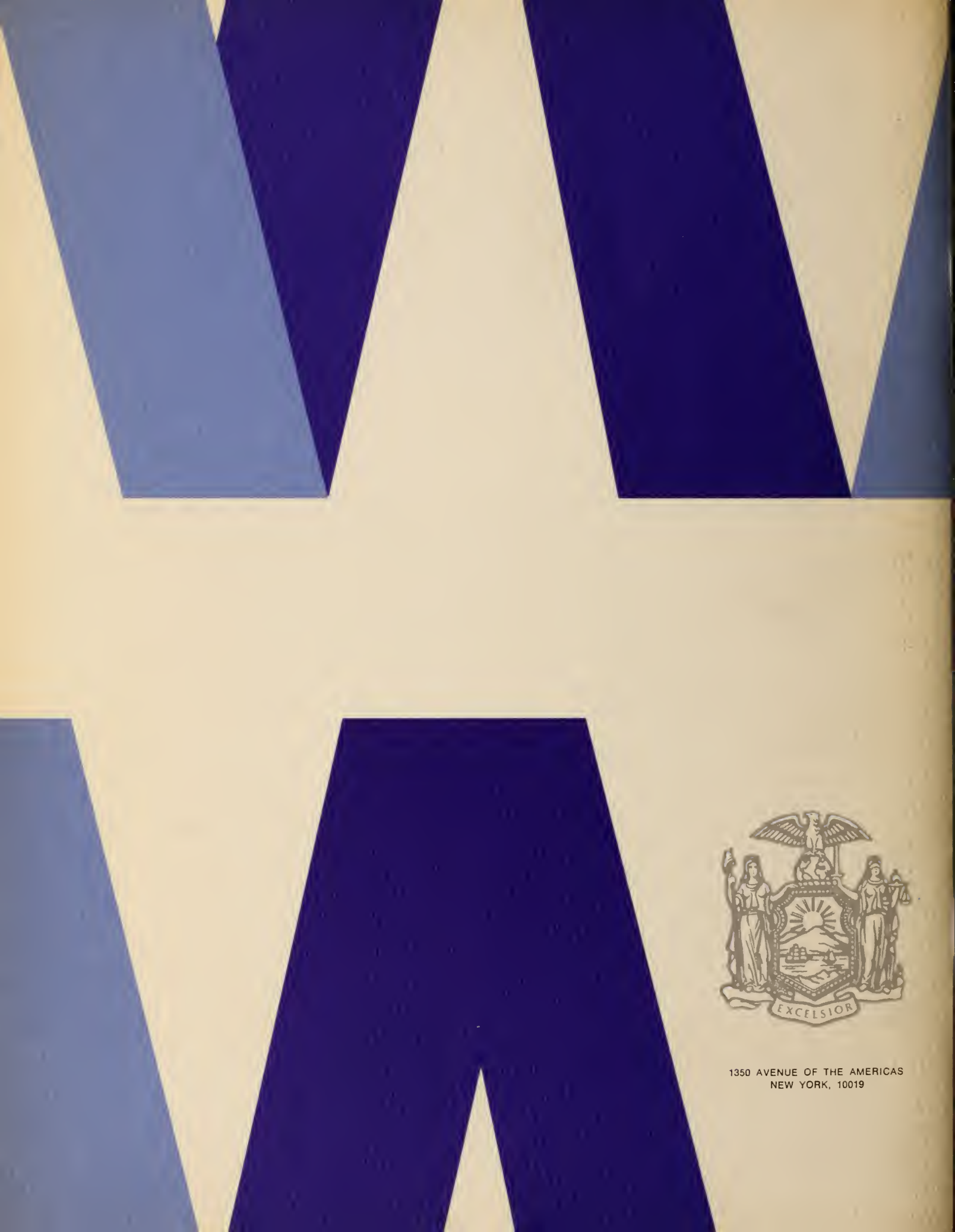
ORDER OF MAGNITUDE COST ESTIMATE

(By Program)

General Aviation/Airport Access

(Cost in millions)

EASTERN CORRIDOR	PHASE One	PHASE Two	Total
Access to JFK Airport	$100	$ —	$100
General Aviation Field — Transportation Center, Republic Airport, Farmingdale	25	—	25
General Aviation, new fields Eastern and Central Long Island	—	20	20
Total Aviation Eastern Corridor	$125	$20	$145
NORTHERN CORRIDOR			
Northwest Westchester General Aviation Field	$ 12	$ —	$ 12
Spring Valley General Aviation Field and Transportation Center	12	—	12
General Aviation Field — S. W. Dutchess County	—	15	15
Total Aviation Northern Corridor	$ 24	$15	$ 39



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